

FY16

PSAP GRANT PROGRAM APPLICATION



VIRGINIA INFORMATION
TECHNOLOGIES AGENCY
Integrated Services Division



FY16 PSAP GRANT PROGRAM APPLICATION

HOW TO APPLY/DEADLINE

The grant application is available and accessible from VITA's Integrated Services Program's website

(<http://www.vita.virginia.gov/isp/default.aspx?id=8578>). Upon completion of the application, it is to be submitted to your Regional Coordinator. Any supporting documentation must also be submitted along with the application, including mandatory budgets for projects (if applicable).

After the close of the grant application cycle, a Grant ID and email receipt notification will be sent to the e-mail address listed on the application received.

All funding requests must be submitted using the grant application. Technical assistance is available from VITA's Public Safety Communications (PSC) staff throughout the grant process. The FY16 PSAP Grant Application Cycle starts July 1, 2014 and concludes on September 30, 2014 at 5:00 pm.

ALL APPLICABLE SECTIONS MUST BE COMPLETED IN ITS ENTIRETY OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE AND NOT ACCEPTED FOR CONSIDERATION.



FY16 PSAP GRANT APPLICATION

PROJECT TITLE

Tazewell-Russell CAD, Mapping, PTP Connection, and Shared Infrastructure

GRANT APPLICANT PROFILE/PROJECT CONTACT

PSAP/HOST PSAP NAME: Tazewell County 911

CONTACT TITLE: Director of 911 & Emergency Communications

CONTACT FIRST NAME: Derrick

CONTACT LAST NAME: Ruble

ADDRESS 1: 315 School Street

ADDRESS 2: Suite 9

CITY: Tazewell

ZIP CODE: 24651-1398

CONTACT EMAIL: derrick.ruble@tcsova.org

CONTACT PHONE NUMBER: (276) 385-1727

CONTACT MOBILE NUMBER: (276) 979-6147

CONTACT FAX NUMBER: (276) 988-5012

REGIONAL COORDINATOR: Tim Addington

HOST PSAP AND PARTICIPATING PSAPS/LOCALITIES

Tazewell County 911 (Tazewell County Sheriff's Office – Communications Division) 30 Public Safety Agencies and the Towns of Bluefield, Cedar Bluff, Pocahontas, Richlands, and Tazewell

Russell County 911 (Russell County Sheriff's Office) 17 Public Safety Agencies and the Towns of Lebanon and Honaker



GRANT TYPE

- Individual PSAP
- Regional Initiative
- Secondary Consolidation
- Shared Services
- Consolidation
-

GRANT PROGRAM TYPE

- Continuity and Consolidation
- Enhancement

TIER

- Out of Service
- Technically Outdated*
- Not Applicable
- Non-Vendor Supported*
- Strengthen

If technically outdated or non-vendor supported, application MUST include age and/or version of hardware/software.

VERSION: _____ # YEARS of HARDWARE/SOFTWARE: _____

**HP DL380G6 Server - 5 Years Old – Running Windows Server 2003 R2 32-Bit
Dell PowerEdge 2950 Server - 6 Years Old – Running VMWare Esxi Free 4.1**

PRIORITY/PROJECT FOCUS CAD

If "Other" selected, please specify: 1T

FINANCIAL DATA

Amount Requested: \$ 350,000

Total Project Cost: \$ 350,000

STATEMENT OF NEED



This statement should reference the relationship to the current funding priorities established by the Grant Committee and include evidence of any financial need, along with additional information on the impact on operational services; consequences of not receiving funding; inclusion of project in a long-term or a strategic plan; and local sustainability:

This is a joint Shared Services Project as outlined in the FY16 Grant Guidelines between the counties of Tazewell and Russell. Tazewell and Russell Counties are requesting funding to create a point-to-point/microwave backbone, and inclusion of shared servers and SANs, between our two PSAPs to greatly enhance our capabilities to share IT resources, CAD, and mapping/GIS services. This project is also a grant priority due to the replacement of non-vendor supported CAD and GIS servers. The shared services will also greatly reduce the occurrence of critical 911 service and operational failures that have been experienced by our two PSAPs over the past 5 years by creating a shared networked IT & Ethernet system.

Russell County has seen significant loss of businesses and jobs over the past few years which has resulted in significant budget restrictions for their PSAP operations and staffing. Tazewell County has fared better with the ability to maintain funding for existing critical public safety systems but has not been able to fund new projects that will replace or strengthen key systems.

This project if not funded, would continue to place a burden on the two PSAPs in their ability to quickly recover from 911 outages, server and system failures, teleco outages, etc. since the two PSAPs act as each other's back-up but without any existing connectivity to share information and/or resources.

The project is aligned with long-term strategies and goals for the two PSAPs in the ability to mitigate and/or recover from failure of mission critical functions by providing the necessary infrastructure to share information and resources.

Describe how the grant will be maintained and supported in the future, if applicable.

This shared services project will be maintained and supported in the future by both PSAPs via savings from multiple existing maintenance and service agreements that will be combined. Daily maintenance and monitoring of systems will be managed by the individual PSAP with more in depth maintenance and repairs made by the vendor(s) via the updated service agreement(s).



COMPREHENSIVE PROJECT DESCRIPTION

Provide a thorough, concise, and complete description of the project, including an outline of the goals and objectives, implementation strategy, and a work plan.

In an effort to share resources and costs associated with PSAP operations as well as provide data redundancy and resilient operations, the Tazewell and Russell County PSAPs have formulated this shared services project that will provide common IT infrastructure at both PSAPs as well as a private, direct data connection utilizing public safety band RF technology.

Both PSAPs will house and maintain identical virtualized servers, large scale storage devices, as well as the appropriate networking infrastructure. Infrastructure will include all software and hardware needed to maintain security, allow for private/secure connections between locations, and provide for scheduled data backups around the clock. Security devices will also provide appropriate access for remote support services by various IT, software, and application vendors to minimize the need for onsite maintenance services in order to reduce ongoing costs.

In addition to shared services and data redundancy provide in this shared services project, two paths of connectivity will exist to ensure resilience of data exchange and accessibility.

1. VPN Connectivity – As both PSAPs are served by sufficient broadband access, the security devices will allow for secure and prioritized data exchange to execute the designed sharing of services.
2. Private Connectivity – The same security devices will utilize, prioritize, and provide failover capabilities between VPN Connectivity over traditional broadband as well as connectivity through a series of Point-to-Point (PTP) wireless connections.

The PTP connections are designed to provide more than sufficient data throughput across 30+ miles. Equipment utilized is designed to withstand the variety of weather conditions at the sites found in the area and remain functional during worst possible atmospheric conditions.



FOR CONTINUITY AND CONSOLIDATION OR ENHANCEMENT PROJECTS:

PROJECT TIMELINE – Select each applicable phase of the project and indicate the estimated completion date. Sample activities for each phase can be found in the PSAP Grant Program Guidelines as well as on the addendum to this form.

PROJECT PHASE	ESTIMATED COMPLETION DATE
<input type="checkbox"/> INITIATION (Project approved by appropriate stakeholders)	09 / 01 / 15
<input type="checkbox"/> DESIGN/PLANNING (Project, system, or solution requirements are developed)	11 / 02 / 15
<input type="checkbox"/> ACQUISITION (Selected system or solution is procured)	01 / 15 / 16
<input type="checkbox"/> IMPLEMENTATION (Selected system or solution is configured and installed)	06 / 01 / 16
<input type="checkbox"/> TESTING/COMPLETION (Selected system or solution is tested and put in production)	08 / 01 / 16



Identify the longevity or sustainability of the project.

This project will act as the catalyst between Tazewell and Russell Counties for the sharing of infrastructure and resources for maintaining 911 services for their citizens. The project also increases the availability and stability in the Ethernet connections for the two PSAPs by providing alternative routes for service 24/7/365.

Savings from currently maintaining multiple individual and separate systems with numerous vendors will be used to maintain the operational “life” of the new systems.

Describe how this project supports the Virginia Statewide Comprehensive 9-1-1 Plan.

This project supports both goals of the Virginia Statewide Comprehensive 9-1-1 Plan and seeks to fulfill an important initiative.

The first goal is to provide a standard level of 9-1-1 emergency dispatch services to the public. By implementing a standardized IT infrastructure, this project would provide consistent 9-1-1 emergency dispatch services to anyone residing in or passing through the Commonwealth, at any time of day, and **during any event**. Consistent service means that all 9-1-1 centers can receive, process, and dispatch “calls” in a dependable and repeatable manner.

The second goal is position 9-1-1 centers to continuously meet the public’s expectations. By having the ability to quickly “failover” to our shared services, it reduces the possibility of the public dialing 9-1-1 and the PSAP not being able to provide and/or send the necessary resources.



SHARED SERVICES/REGIONAL INITIATIVE (if applicable)

The relationship of the initiative to the participating PSAPs:

Tazewell and Russell County PSAPs act as each other's backup during 9-1-1 and other key system failures. Unfortunately, the two PSAPs do not have an ability to share and/or transfer information during these critical system failures. By funding this shared services project, this will greatly improve the day-to-day working and functionality relationships of the two PSAPs.

Intended collaborative efforts:

This collaborative effort will establish a primary link and infrastructure serving multiple purposes: 1) replace non-vendor supported CAD and GIS servers; 2) increase stability of Ethernet availability by providing secondary means of routing; 3) provide common IT infrastructure; 4) provide shared services and data redundancy; and 5) creates a connectivity link to enable future collaborations.

Resource sharing:

The point to point, server, and SAN systems will be shared and utilized by Tazewell and Russell Counties on a 24/7/365 basis. By creating the point to point system, this is allowing both counties to share, in real-time, their CAD and mapping/GIS systems. By connecting these two PSAPs, this would expand the ability to pursue other, future shared projects, such as CPE geo-diversity, with a cost savings to both compared to each pursuing, funding, and supporting individual projects.



How does the initiative impacts the operational or strategic plans of the participating agencies:

The shared services project will facilitate Tazewell and Russell Counties in both operational and strategic plans in providing reliable 9-1-1 service to its citizens and being able to quickly recover from failures and/or outages of various mission critical systems.

CONSOLIDATION (Primary or Secondary) - (if applicable)

How would a consolidation take place and provide improved service:

Not Applicable

How should it be organized and staffed:

Not Applicable



What services should it perform:

Not Applicable

How should policies be made and changed:

Not Applicable

How should it be funded:

Not Applicable

What communication changes or improvements should be made in order to better support operations:

Not Applicable



BUDGET AND BUDGET NARRATIVE

List the planned expenditures to be made with grant funds. (NOTE: In lieu of a line item breakdown, an itemized cost schedule or detailed vendor prepared quote may be submitted as an attachment. However, budgetary quotes received from a particular vendor(s) during the application process do not commit the PSAP to use that vendor(s) once the grant is awarded.) Briefly explain the reason for each requested budget item and provide the basis for its cost. In addition, if contingency cost has been added, please identify the amount.

\$114,950 – Point to Point (PTP) System

\$169,410 – Shared Servers and SANs

\$65,640 – Vendor System Integration & Contingency

\$350,000 – Total Budgeted Project Cost

Due to the mountainous terrain in the region, the PTP will require four “legs” to connect the two PSAPs together and includes all radio equipment, mounting, installation labor, and tower climbs. The shared servers and SANs are to be mirrored systems between the two PSAPs and include equipment and installation costs. The contingency of \$65,640 is for the various system/software vendors to relocate and integrate their applications to the new servers.

Vendor Budgetary Quotes and Supporting Information Attached

EVALUATION

How will the project be evaluated and measured for achievement and success:

Tazewell County and Russell County PSAPs will establish milestones and goals to evaluate the progress achieved and the overall success of the project. The project will be monitored throughout the process with periodic meetings with the PSAP Staff, vendors, and other stakeholders. Final testing and completion will be based on PSAP goals and manufacture specifications for each system installed.



FINANCIAL AND PROGRAMMATIC REPORT

PROJECT PHASES

SAMPLE ACTIVITIES

PHASE

SAMPLE ACTIVITIES

INITIATION

(Project approved by appropriate stakeholders)

- Project concept is documented
- Local Board or governing authority approval or endorsement is received
- PSAP grant application is filed
- Local budgets are obtained
- Appropriated grant funds are approved
- Budgetary estimates are obtained

DESIGN/PLANNING

(Project, system, or solution requirements are developed)

- Requirements are documented
- Components to be purchased are identified
- General design is documented

ACQUISITION

(Selected system or solution is procured)

- RFP (or other bid related processes) are drafted
- Proposals are evaluated
- Contract is signed
- Purchase orders are issued
- Quotes are obtained/grant funds draw down

IMPLEMENTATION

(Selected system or solution is configured and installed)

- Purchased components are delivered and installed
- Training is performed

TESTING/COMPLETION

(Selected system or solution is tested and put in production)

- Performance of system/solution is validated
- System/solution goes "live"

Microsoft Support Lifecycle

Product support lifecycle information by product family

[Back to Support Lifecycle home page](#)

Microsoft provides support on the current service pack, and in some cases the immediately preceding service pack, for the products listed below. See the [Lifecycle Support Policy FAQ](#) for details on the Service Pack Support Policy. If you have any questions regarding support for a product, please contact your Microsoft representative. If you need technical support, visit the [Contact Microsoft](#) Web site.

The information on this page is subject to the [Microsoft Policy Disclaimer and Change Notice](#). Return to this site periodically to review any such changes.

[Export this table to a CSV file](#)

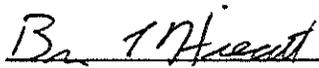
Products Released	Lifecycle Start Date	Mainstream Support End Date	Extended Support End Date	Service Pack Support End Date	Notes
Microsoft Windows Server 2003, Datacenter Edition (32-bit x86)	5/28/2003	7/13/2010	7/14/2015	4/10/2007	
Microsoft Windows Server 2003, Datacenter Edition for Itanium-Based Systems	6/19/2003	7/13/2010	7/14/2015	4/10/2007	
Microsoft Windows Server 2003, Datacenter x64 Edition	5/28/2005	7/13/2010	7/14/2015	4/14/2009	
Microsoft Windows Server 2003, Enterprise Edition (32-bit x86)	5/28/2003	7/13/2010	7/14/2015	4/10/2007	
Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems	6/19/2003	7/13/2010	7/14/2015	4/10/2007	
Microsoft Windows Server 2003, Enterprise x64 Edition	5/28/2005	7/13/2010	7/14/2015	4/14/2009	
Microsoft Windows Server 2003, Standard Edition (32-bit x86)	5/28/2003	7/13/2010	7/14/2015	4/10/2007	
Microsoft Windows Server 2003, Standard x64 Edition	5/28/2005	7/13/2010	7/14/2015	4/14/2009	
Microsoft Windows Server 2003, Web Edition	5/28/2003	7/13/2010	7/14/2015	4/10/2007	
Microsoft Windows Server 2003 Service Pack 1	3/30/2005	Not Applicable	Not Applicable	4/14/2009	
Microsoft Windows Server 2003 Service Pack 1 for Itanium-based Systems	5/13/2005	Not Applicable	Not Applicable	4/14/2009	
Microsoft Windows Server 2003 Service Pack 2	3/13/2007	Review Note	Review Note		Support ends 24 months after the next service pack releases or at the end of the product's support lifecycle, whichever comes first. For more information, please see the service pack policy here .
Microsoft Windows Server 2003 Service Pack 2 for Itanium-based Systems	3/13/2007	Review Note	Review Note		Support ends 24 months after the next service pack releases or at the end of the product's support lifecycle, whichever comes first. For more information, please see the service pack policy here .
Microsoft Windows Server 2003 Service Pack 2 x64 Edition	3/13/2007	Review Note	Review Note		Support ends 24 months after the next service pack releases or at the end of the product's support lifecycle, whichever comes first. For more information, please see the service pack policy here .

**MEMORANDUM OF UNDERSTANDING BETWEEN
TAZEWELL COUNTY SHERIFF'S OFFICE AND RUSSELL COUNTY SHERIFF'S OFFICE
FOR SHARED SERVICES PROJECT**

This Memorandum of Understanding (MOU) is entered into this day, September 26, 2014, between the Tazewell County Sheriff's Office and the Russell County Sheriff's Office who have operational control of their respective Public Safety Answering Points (PSAPs).

This MOU is to confirm support for the submittal of a Shared Services Project under the FY16 Virginia E-911 Services Board PSAP Grant Program that will benefit the Tazewell County and Russell County 911 Centers.

If awarded funding, both Sheriff's Offices will work to establish a cooperative agreement that will outline the responsibilities, commitment, and continual funding from each participant to ensure the initial and long-term success of the Shared Services Project.



Sheriff Brian H. Hiatt
Tazewell County Sheriff's Office



Sheriff Steven L. Dye
Russell County Sheriff's Office



Advanced Network Systems, Inc.
 801 South College Ave., Suite 3
 Bluefield, Virginia 24605
 800.639.6757 276.322.1555 fax 434.973.9322
 sales@getadvanced.net

BUDGETARY QUOTATION

<u>Date</u> 09/22/2014	<u>Quote #</u> 10373
<u>Terms</u> Net 30	<u>Rep</u> Kevin

Prepared for:

Tazewell County 911 Center
 Derrick Ruble (276) 385-1727
 315 School Street
 Suite 9
 Tazewell, VA 24651 USA

Thank you for the opportunity to quote you on this project. Please review the information below for accuracy and completeness.

Description	Unit Price	Qty	Ext. Price
Budgetary Shared Services - PTP Links to All Towers:			
Cambium PTP650 Lite (125 Mbps) to Full (450) Mbps Link Upgrade	\$2,095.00	8.00	\$16,760.00
Cambium PTP 650 Connectorized End with AC+DC EnH Supply	\$2,345.00	8.00	\$18,760.00
2-ft.(0.6m), High Performance Dual-pol Antenna, 4.4 - 5.0 GHz	\$1,050.00	6.00	\$6,300.00
4.4-5.0 GHz 32.4dBi 4' Parabolic Dish, N Female	\$2,825.00	2.00	\$5,650.00
Mini Ice-Shield	\$260.00	4.00	\$1,040.00
Wireless Installation Kit - Connectorized	\$775.00	4.00	\$3,100.00
Install and/or Mounting Materials	\$600.00	4.00	\$2,400.00
Advanced Network Systems' Tower Climbs and Radio Placement (Estimated rate; Actual To Be Determined During Site Survey and Final Pricing)	\$7,000.00	4.00	\$28,000.00
ANS Hourly Installation Rate (Estimated hours required; actual to be determined upon completion)	\$100.00	160.00	\$16,000.00
NetWORKs Wireless Support Program 8x5xNBD for Point to Point Links	\$4,235.00	4.00	\$16,940.00

Please Note The Following:

- This budgetary pricing includes all travel and tower climbs.
- This quote assumes power and switching is in place at each site.

Sub Total: \$114,950.00

Total: \$114,950.00

Technology Investment Guarantee. When you purchase equipment from Advanced Network Systems you get a variety of valuable support services that come along with it. If you are not getting the same services that we incorporate into every sale, then you are not making an equal comparison of real value.

- ASSURANCE #1 We Make Sure the Equipment You Buy Is Correct.
- ASSURANCE #2 If Newly Installed Equipment Fails, We Replace It.
- ASSURANCE #3 We Stand Behind All Our Installation Work.
- ASSURANCE #4 When You Need Local Support, We're There.
- ASSURANCE #5 We Offer Complete Product Lifecycle Management.

For a complete explanation of all of these unique benefits associated with our Technology Investment Guarantee, visit our web site at <http://www.getadvanced.net/terms>

PLEASE NOTE: Unless specifically detailed above, installation, maintenance and training services are not included in this quotation. Please notify your account representative to have any of these services added to your quotation. Applicable shipping, handling and sales tax are not included in this quotation and will be due and payable as calculated on the invoice. Pricing is subject to change after 30 days from the date of this quotation. All purchases are subject to [Advanced Network Systems' terms and conditions of sale](#). Purchases utilizing credit terms are subject to Advanced Network Systems' credit terms and conditions as detailed within our credit application.

Financing Options Available

ANS offers a variety of leasing options to assist you in financing your purchase . Please contact your Account rep for more information .

Technical Services Support

Advanced Network Systems has a staff of Network Engineers available for installation, technical support, maintenance and technology training . Technology services are quoted on an individual project basis . Please contact your Account Executive for more information .

Represented Product Lines

3Com, Cisco, Dell, ESET, Extreme, GTB Technologies, HP, Meru, Microsoft, Milestone, Motorola, Polycom, Solectek, Tipping Point, WatchGuard and more .

Substitute Purchase Order Agreement

Buyer, hereinafter referred to as "Purchaser," is submitting this Purchase Order Agreement in lieu of a Purchaser generated Purchase Order and understands that all orders are subject to [Advanced Network Systems' Terms and Conditions of Sale](#). Payment terms are agreed as Net 30 days from date of invoice. The undersigned certifies that they are duly authorized to sign this substitute Purchase Order Agreement. This Purchase Order Agreement and contract is understood and accepted by the undersigned authorized agent representing the purchaser in this agreement.

P.O. #: _____ Authorized by NAME/TITLE: _____(print)

Authorized Signature _____ Date: _____

Terms and Conditions:

This purchase is subject to Advanced Network Systems' Credit Application Terms and Conditions. To prevent delays in processing your order, please return all attached pages of this Purchase Order Agreement. This Quote will expire on 10/20/2014.



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 801 South College Ave., Suite 3
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 315 School Street
 Suite 9
 Tazewell, VA 24651 USA

Thank you for the opportunity to quote you on this project. Please review the information below for accuracy and completeness.

Description	Unit Price	Qty	Ext. Price
Budgetary Shared Services - Servers and SANs:			
Dell PowerVault MD3220i iSCSI SAN	\$16,680.00	2.00	\$33,360.00
Dell PowerEdge R720 Server	\$7,425.00	4.00	\$29,700.00
Microsoft Windows Server Datacenter R2 2012 (2 Processor) (Government)	\$4,815.00	4.00	\$19,260.00
Microsoft Windows Server 2012 User CAL (Government)	\$27.00	100.00	\$2,700.00
Veeam Backup & Replication Enterprise Plus for VMWare License (Government)	\$1,980.00	8.00	\$15,840.00
VMWare vSphere 5 Enterprise (1) Processor	\$2,855.00	8.00	\$22,840.00
1 Year Support for VMware vSphere v5 Enterprise License for (1) Processor	\$770.00	8.00	\$6,160.00
Trade Up - WatchGuard XTM 535 and 1 Year Security Bundle <i>(includes Firewall Appliance and Subscriptions to LiveSecurity, Application Control, WebBlocker, spamBlocker, Gateway Antivirus, Intrusion Prevention Service, Reputation Enabled Defense and Firewall Pro)</i>	\$3,420.00	2.00	\$6,840.00
Extreme Summit X460 24-Port Switch with (4) SFP Ports and (20) GIG Ports (Power Cord not included)	\$2,250.00	2.00	\$4,500.00
Synology 12 Bay (Diskless) NAS with iSCSI	\$2,780.00	2.00	\$5,560.00
Western Digital 4TB 3.5" Internal Hard Drive	\$215.00	8.00	\$1,720.00
ANS Hourly Installation Rate (Estimated hours required; actual to be determined upon completion)	\$100.00	150.00	\$15,000.00
Advanced Network Systems' Annual NetWORKs 5x12xRR Support Contract for (2) Extreme Summit X460 24-Port Switch	\$900.00	1.00	\$900.00
Shared Services – Outdoor Cabinet:			
Innovative Circuit Tech. - 12 Amp UPS w/ Batt Backup	\$440.00	1.00	\$440.00
Outdoor Cabinet	\$1,725.00	1.00	\$1,725.00
ComNet Environmentally Hardened Managed Ethernet Switch with (7) 10/100TX + (3) Configurable 10/100/1000TX / 100/1000FX Ports	\$1,620.00	1.00	\$1,620.00
WatchGuard XTM 25-W and 1-Year Live Security	\$415.00	3.00	\$1,245.00

Scope on external document.

Sub Total: **\$169,410.00**

Total: **\$169,410.00**

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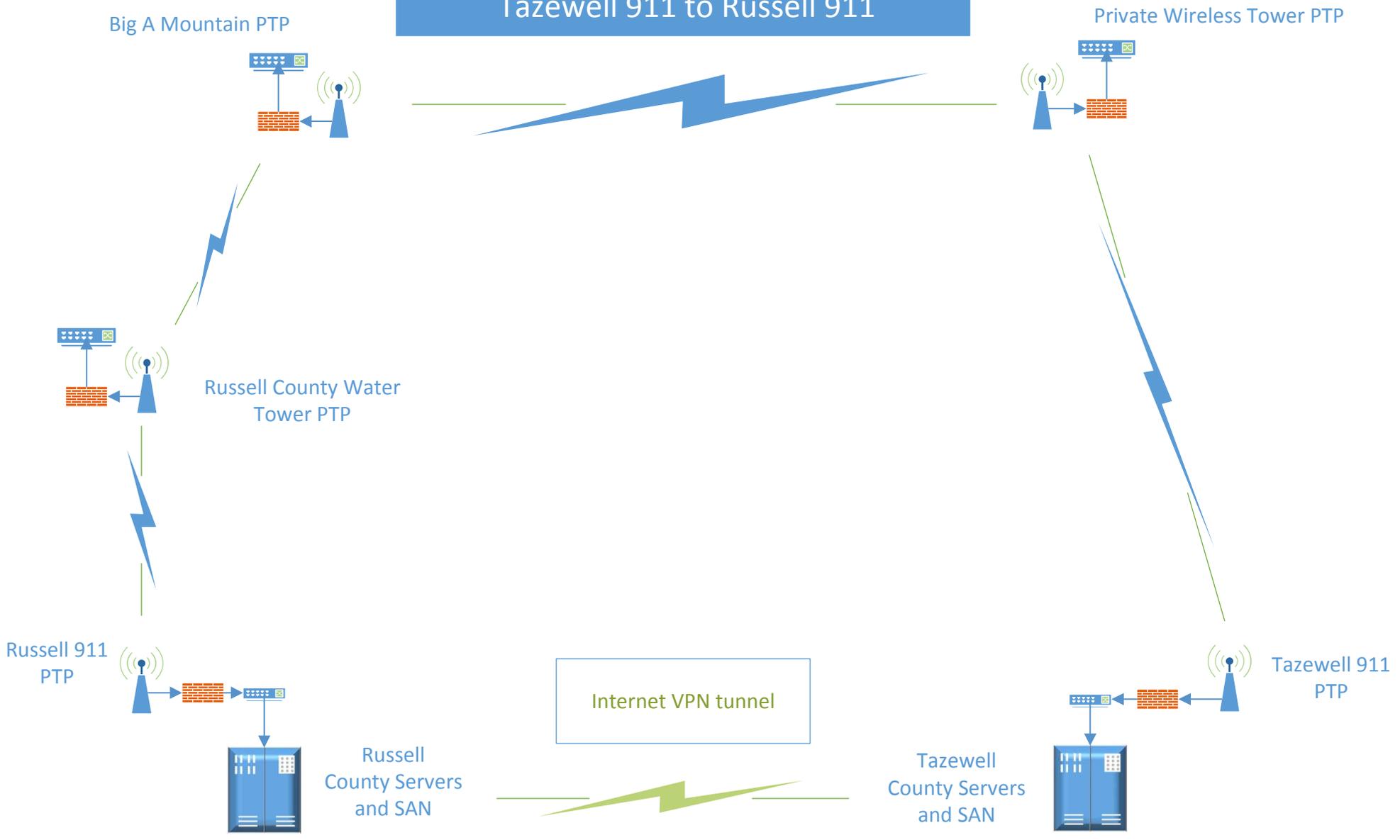
P.O. #: _____ Authorized by NAME/TITLE: _____ (print)

Authorized Signature _____ Date: _____

Terms and Conditions:

This purchase is subject to Advanced Network Systems' Credit Application Terms and Conditions. To prevent delays in processing your order, please return all attached pages of this Purchase Order Agreement. This Quote will expire on 10/20/2014.

Shared Services layout Tazewell 911 to Russell 911



Project PTP Shared Services links Tazewell 911 tp 091714

LINKPlanner Proposal Report

17 September 2014

Vince Palumbo

Organization: Advanced Network Systems

Phone: 434-220-8644

Email: vpalumbo@getadvanced.net



center = 37.01224N 081.80566W

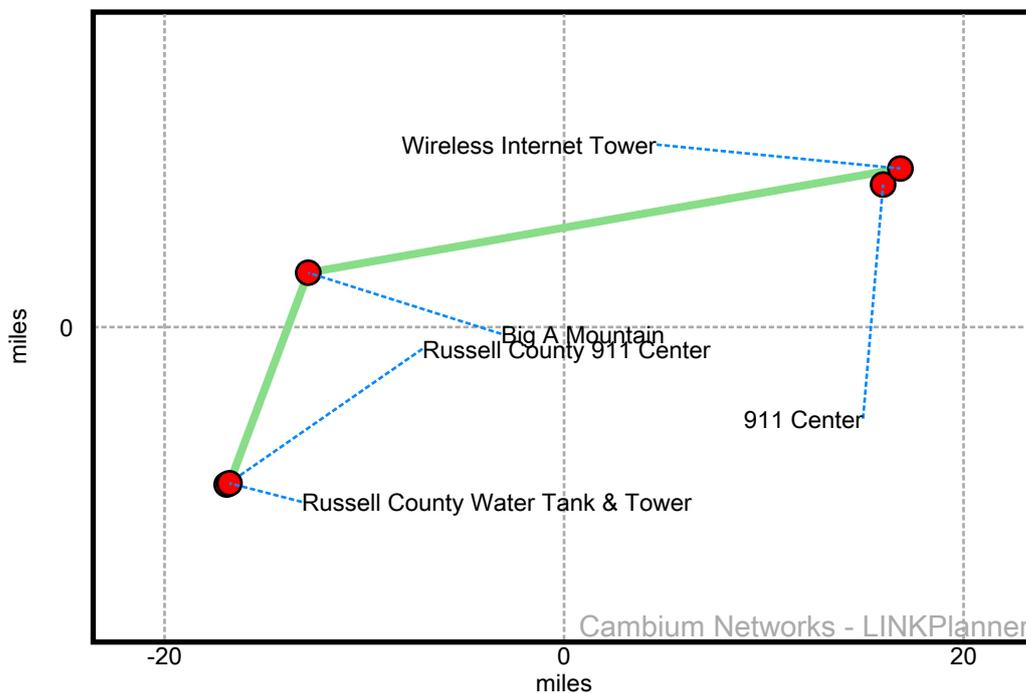


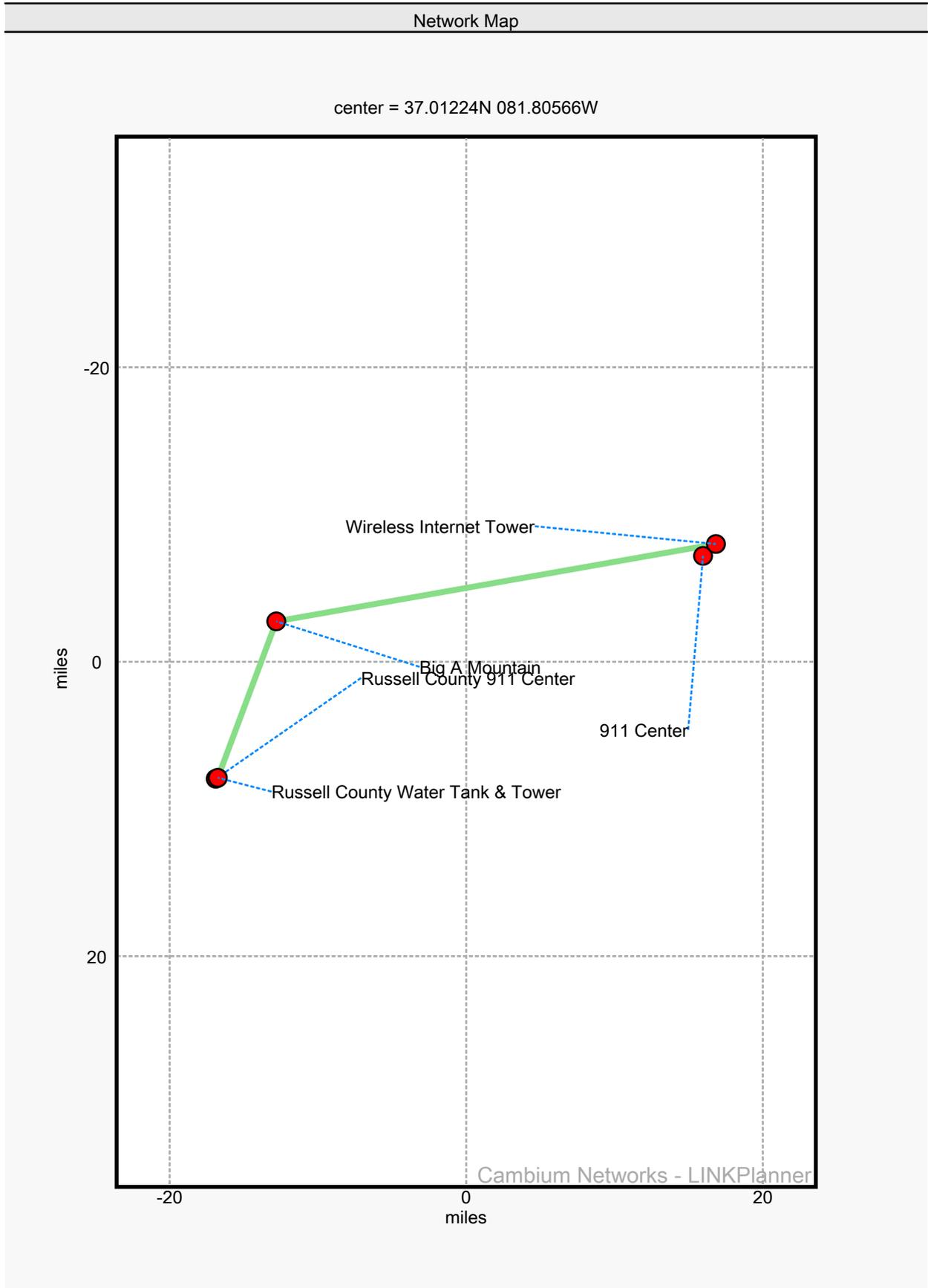
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1. Project Summary

Project: PTP Shared Services links Tazewell 911 tp 091714

General Information	
Customer Name	TAZEWELL 911
Company Name	
Address	
Phone	
Cell Phone	
Email	

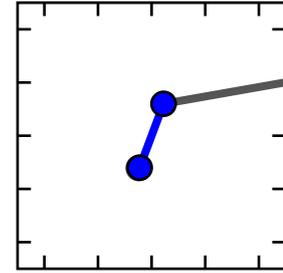


Link name	Product	Local antenna	Remote antenna	Max aggregate IP throughput (Mbps)
Big A Mountain to Russell County Water Tank & Tower	PTP650	Radio Waves 2ft High Performance Dual-Polar Parabolic HPD2-4.7	Radio Waves 2ft High Performance Dual-Polar Parabolic HPD2-4.7	193.74
Russell County Water Tank & Tower to Russell County 911 Center	PTP650	Cambium Networks Integrated Dual Polar Antenna	Cambium Networks Integrated Dual Polar Antenna	201.16
Wireless Internet Tower to Big A Mountain	PTP650	Radio Waves 4ft High Performance Dual-Polar Parabolic HPD4-4.7	Radio Waves 4ft High Performance Dual-Polar Parabolic HPD4-4.7	187.72
Wireless Internet Tower to 911 Center	PTP650	Radio Waves 2ft High Performance Dual-Polar Parabolic HPD2-4.7	Radio Waves 2ft High Performance Dual-Polar Parabolic HPD2-4.7	200.59

Part Number	Qty	Description
(no part number)	4	Radio Waves 2ft High Performance Dual-Polar Parabolic HPD2-4.7
(no part number)	2	Radio Waves 4ft High Performance Dual-Polar Parabolic HPD4-4.7
01010419001	34	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	8	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	8	PTP 650 LPU and Grounding Kit (1 kit per ODU)
C050065H008	6	PTP 650 Connectorized END with AC+DC Enhanced Supply (FCC/IC). Kit includes ODU, power supply, mounting bracket and US line cord
C050065H010	2	PTP 650 Integrated END with AC+DC Enhanced Supply (FCC/IC). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	4	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)



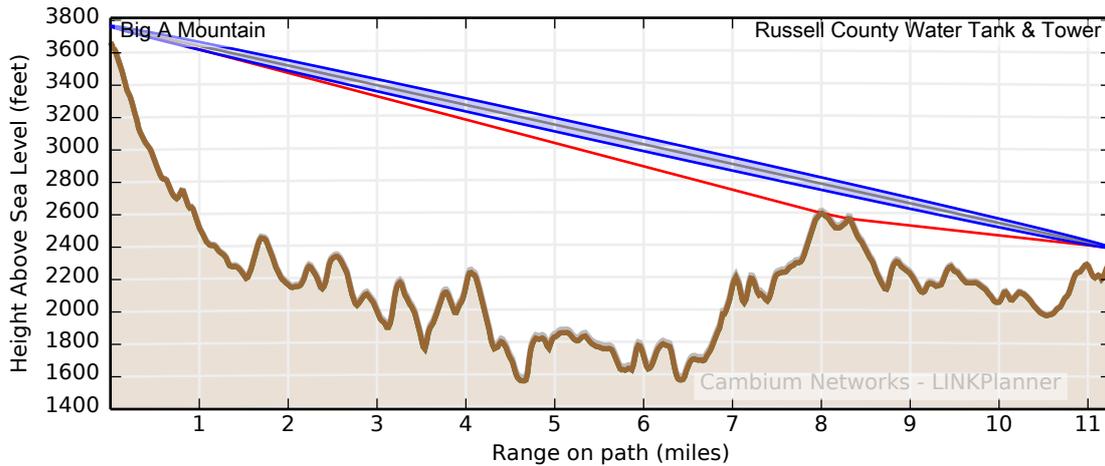
Big A Mountain to Russell County Water Tank Tower



Equipment: Cambium Networks PTP650 Full Connectorized

Radio Waves 2ft High Performance Dual-Polar Parabolic HPD2-4.7 @ 100 ft

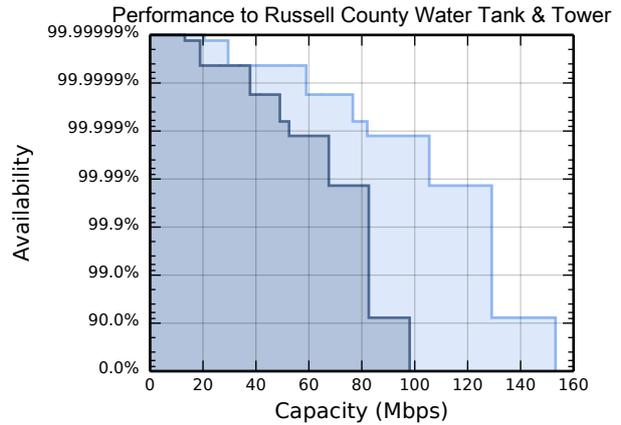
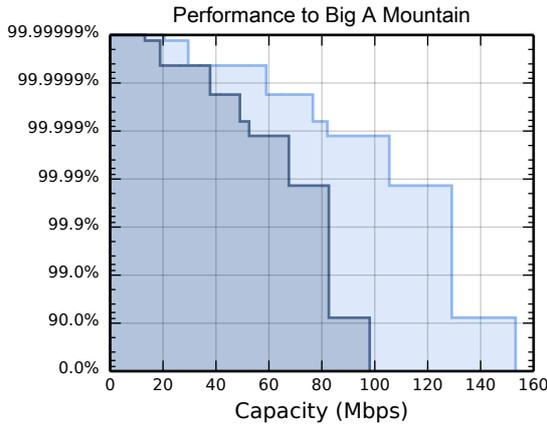
Radio Waves 2ft High Performance Dual-Polar Parabolic HPD2-4.7 @ 100 ft



	Performance to Big A Mountain	Performance to Russell County Water Tank & Tower
Mean IP	96.9 Mbps	96.9 Mbps
IP Availability	100.0000 % for 24.0 Mbps	100.0000 % for 24.0 Mbps

Link Summary			
Link Length	11.266 mi.	System Gain	162.23 dB
Band	4.9 GHz	System Gain Margin	30.56 dB
Regulation	United States	Mean Aggregate Data Rate	193.7 Mbps
Modulation	Adaptive	Annual Link Availability	100.0000 %
Bandwidth	20 MHz	Annual Link Unavailability	0 secs/year
Total Path Loss	131.67 dB	Prediction Model	ITU-R

Performance Charts



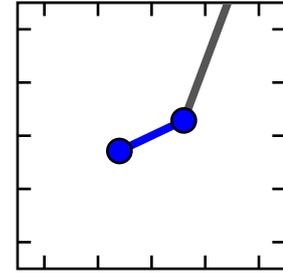
- High Capacity, assumes there is no load in the other direction
- Symmetrical Capacity, assumes a saturated load in the other direction

Climatic Factors, Losses and Standards			
dN/dH not exceeded for 1% of time	-230.71 N units/km	Link Type	Line-of-Sight
Area roughness 110x110km	185.34 metre	Excess Path Loss	0.00 dB
Geoclimatic factor	6.91e-05	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
Fade Occurrence Factor (P0)	1.16e-04	Diffraction Loss	ITU-R P.526-10
Path inclination	23.01 mr	Propagation	ITU-R P.530-12
0.01% Rain rate	55.93 mm/hr	Rain Rate	ITU-R P.837-5
Free Space Path Loss	131.53 dB	Refractivity Index	ITU-R P.453-9
Gaseous Absorption Loss	0.13 dB		

Part Number	Qty	Description
(no part number)	2	Radio Waves 2ft High Performance Dual-Polar Parabolic HPD2-4.7
01010419001	10	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	PTP 650 LPU and Grounding Kit (1 kit per ODU)
C050065H008	2	PTP 650 Connectorized END with AC+DC Enhanced Supply (FCC/IC). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)



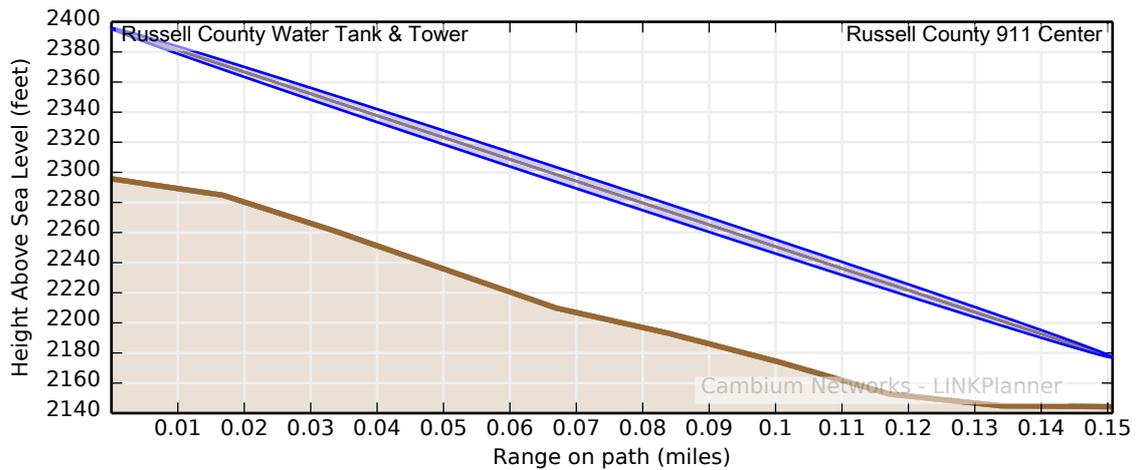
Russell County Water Tank Tower to Russell County 911 Center



Equipment: Cambium Networks PTP650 Full Integrated

Cambium Networks Integrated Dual Polar Antenna @ 100 ft

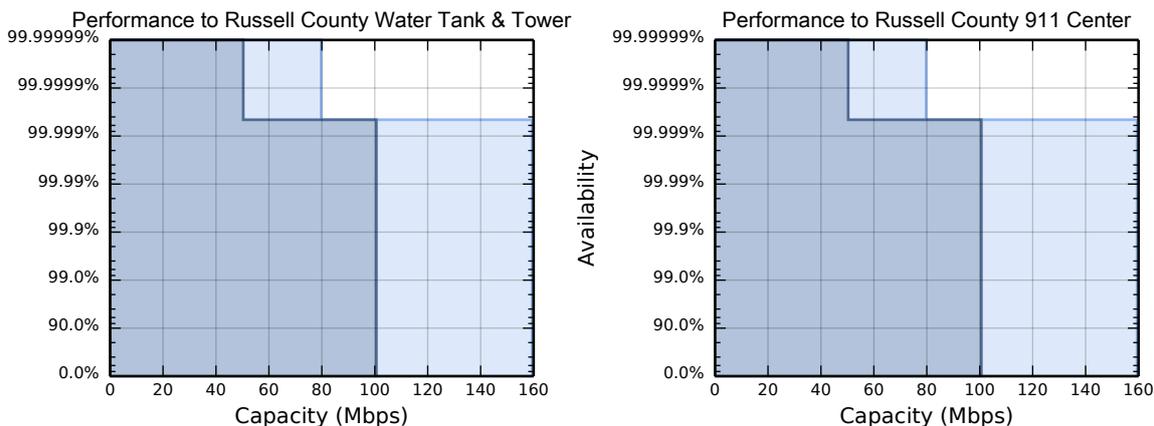
Cambium Networks Integrated Dual Polar Antenna @ 33 ft



	Performance to Russell County Water Tank & Tower	Performance to Russell County 911 Center
Mean IP	100.6 Mbps	100.6 Mbps
IP Availability	100.0000 % for 24.0 Mbps	100.0000 % for 24.0 Mbps

Link Summary			
Link Length	0.151 mi.	System Gain	145.55 dB
Band	4.9 GHz	System Gain Margin	51.48 dB
Regulation	United States	Mean Aggregate Data Rate	201.2 Mbps
Modulation	Adaptive	Annual Link Availability	100.0000 %
Bandwidth	20 MHz	Annual Link Unavailability	0 secs/year
Total Path Loss	94.07 dB	Prediction Model	ITU-R

Performance Charts



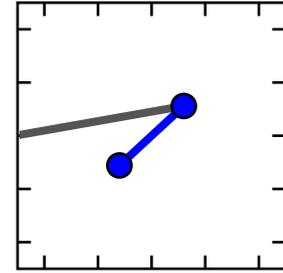
- High Capacity, assumes there is no load in the other direction
- Symmetrical Capacity, assumes a saturated load in the other direction

Climatic Factors, Losses and Standards			
dN/dH not exceeded for 1% of time	-230.17 N units/km	Link Type	Line-of-Sight
Area roughness 110x110km	186.73 metre	Excess Path Loss	0.00 dB
Geoclimatic factor	6.86e-05	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
Fade Occurrence Factor (P0)	1.25e-11	Diffraction Loss	ITU-R P.526-10
Path inclination	274.77 mr	Propagation	ITU-R P.530-12
0.01% Rain rate	56.20 mm/hr	Rain Rate	ITU-R P.837-5
Free Space Path Loss	94.06 dB	Refractivity Index	ITU-R P.453-9
Gaseous Absorption Loss	0.00 dB		

Part Number	Qty	Description
01010419001	5	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	PTP 650 LPU and Grounding Kit (1 kit per ODU)
C050065H010	2	PTP 650 Integrated END with AC+DC Enhanced Supply (FCC/IC). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)



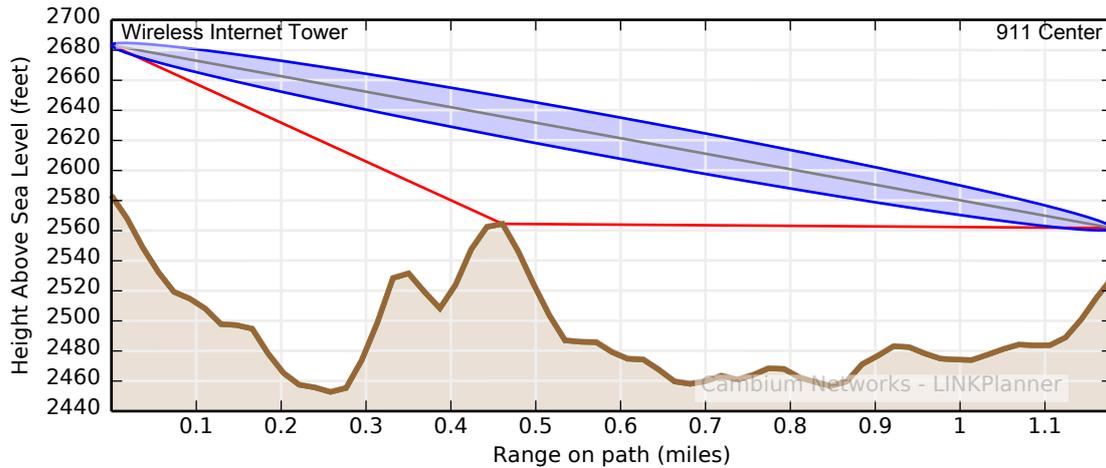
Wireless Internet Tower to 911 Center



Equipment: Cambium Networks PTP650 Full Connectorized

Radio Waves 2ft High Performance Dual-Polar Parabolic HPD2-4.7 @ 100 ft

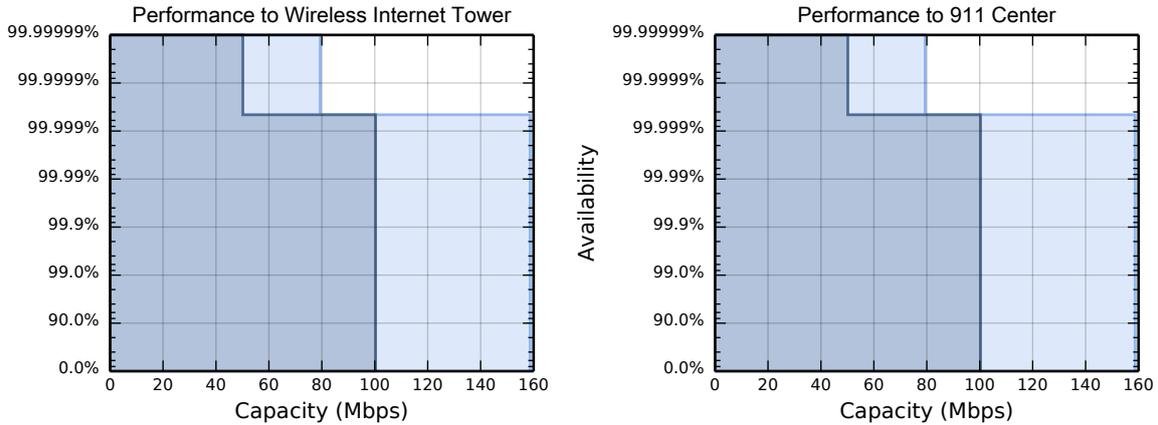
Radio Waves 2ft High Performance Dual-Polar Parabolic HPD2-4.7 @ 33 ft



	Performance to Wireless Internet Tower	Performance to 911 Center
Mean IP	100.3 Mbps	100.3 Mbps
IP Availability	100.0000 % for 24.0 Mbps	100.0000 % for 24.0 Mbps

Link Summary			
Link Length	1.180 mi.	System Gain	162.23 dB
Band	4.9 GHz	System Gain Margin	50.28 dB
Regulation	United States	Mean Aggregate Data Rate	200.6 Mbps
Modulation	Adaptive	Annual Link Availability	100.0000 %
Bandwidth	20 MHz	Annual Link Unavailability	0 secs/year
Total Path Loss	111.95 dB	Prediction Model	ITU-R

Performance Charts



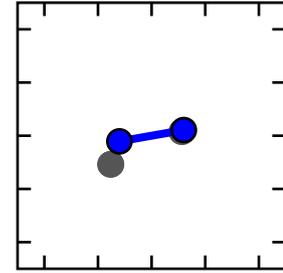
- High Capacity, assumes there is no load in the other direction
- Symmetrical Capacity, assumes a saturated load in the other direction

Climatic Factors, Losses and Standards			
dN/dH not exceeded for 1% of time	-221.70 N units/km	Link Type	Line-of-Sight
Area roughness 110x110km	164.32 metre	Excess Path Loss	0.00 dB
Geoclimatic factor	6.83e-05	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
Fade Occurrence Factor (P0)	8.87e-08	Diffraction Loss	ITU-R P.526-10
Path inclination	19.52 mr	Propagation	ITU-R P.530-12
0.01% Rain rate	54.81 mm/hr	Rain Rate	ITU-R P.837-5
Free Space Path Loss	111.93 dB	Refractivity Index	ITU-R P.453-9
Gaseous Absorption Loss	0.01 dB		

Part Number	Qty	Description
(no part number)	2	Radio Waves 2ft High Performance Dual-Polar Parabolic HPD2-4.7
01010419001	9	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	PTP 650 LPU and Grounding Kit (1 kit per ODU)
C050065H008	2	PTP 650 Connectorized END with AC+DC Enhanced Supply (FCC/IC). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)



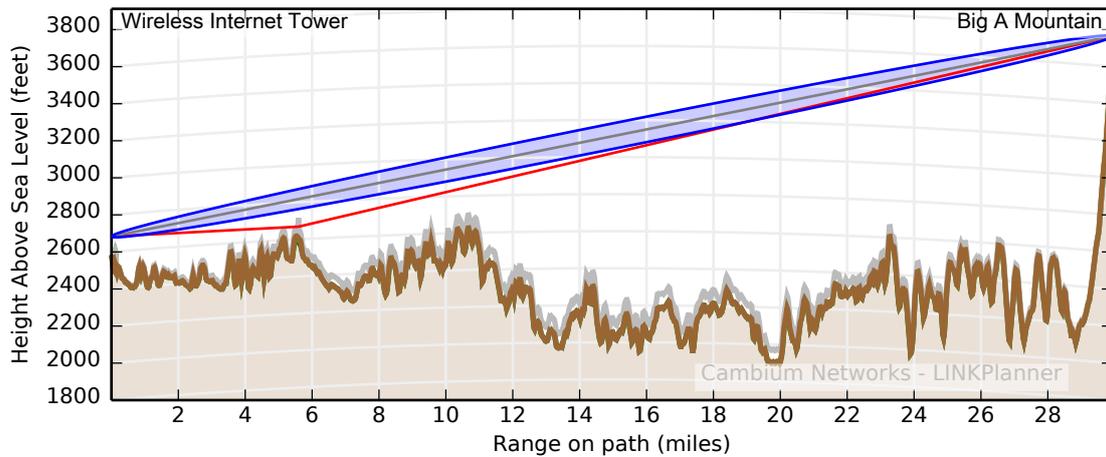
Wireless Internet Tower to Big A Mountain



Equipment: Cambium Networks PTP650 Full Connectorized

Radio Waves 4ft High Performance Dual-Polar Parabolic HPD4-4.7 @ 100 ft

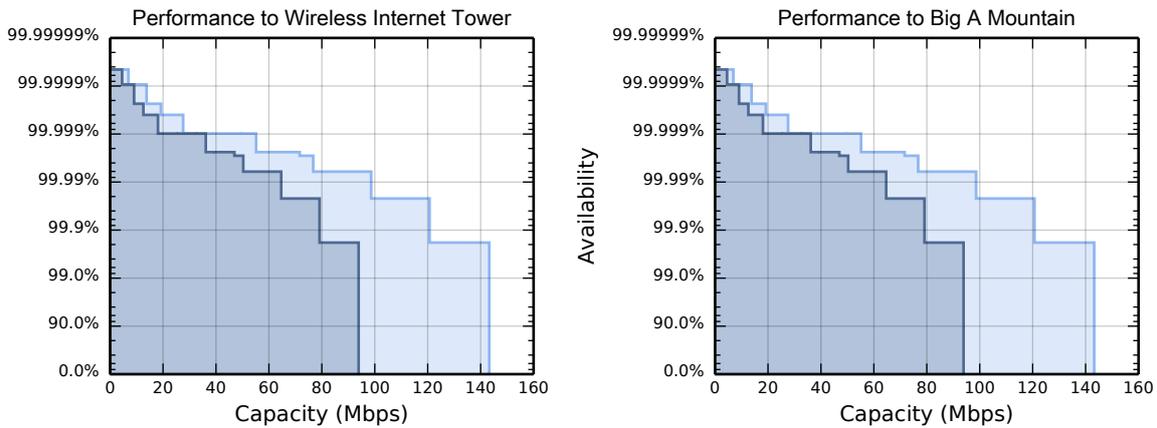
Radio Waves 4ft High Performance Dual-Polar Parabolic HPD4-4.7 @ 100 ft



	Performance to Wireless Internet Tower	Performance to Big A Mountain
Mean IP	93.9 Mbps	93.9 Mbps
IP Availability	99.9990 % for 24.0 Mbps	99.9990 % for 24.0 Mbps

Link Summary			
Link Length	29.934 mi.	System Gain	175.43 dB
Band	4.9 GHz	System Gain Margin	35.06 dB
Regulation	United States	Mean Aggregate Data Rate	187.7 Mbps
Modulation	Adaptive	Annual Link Availability	100.0000 %
Bandwidth	20 MHz	Annual Link Unavailability	14 secs/year
Total Path Loss	140.38 dB	Prediction Model	ITU-R

Performance Charts



- High Capacity, assumes there is no load in the other direction
- Symmetrical Capacity, assumes a saturated load in the other direction

Climatic Factors, Losses and Standards			
dN/dH not exceeded for 1% of time	-226.59 N units/km	Link Type	Line-of-Sight
Area roughness 110x110km	181.85 metre	Excess Path Loss	0.00 dB
Geoclimatic factor	6.77e-05	Atmospheric Gasses	ITU-R P.676-7, ITU-R P.835-4
Fade Occurrence Factor (P0)	6.48e-03	Diffraction Loss	ITU-R P.526-10
Path inclination	6.84 mr	Propagation	ITU-R P.530-12
0.01% Rain rate	55.22 mm/hr	Rain Rate	ITU-R P.837-5
Free Space Path Loss	140.02 dB	Refractivity Index	ITU-R P.453-9
Gaseous Absorption Loss	0.35 dB		

Part Number	Qty	Description
(no part number)	2	Radio Waves 4ft High Performance Dual-Polar Parabolic HPD4-4.7
01010419001	10	Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable
C000065K022	2	PTP 650 Lite (Up to 125Mbps) to Full (Up to 450Mbps) Link Capacity upgrade license per ODU
C000065L007	2	PTP 650 LPU and Grounding Kit (1 kit per ODU)
C050065H008	2	PTP 650 Connectorized END with AC+DC Enhanced Supply (FCC/IC). Kit includes ODU, power supply, mounting bracket and US line cord
WB3176	1	328 ft (100 m) Reel Outdoor Copper Clad CAT5E (Recommended for PTP)

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